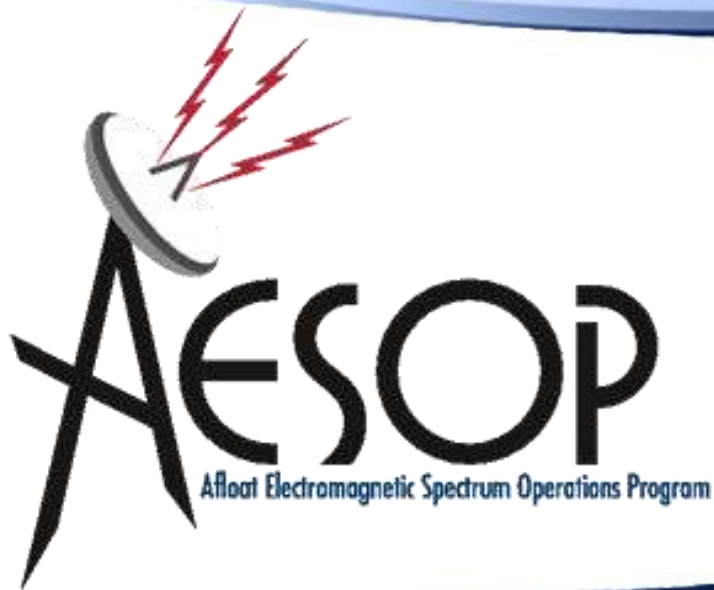


AESOP 3.0 Highlights

Afloat Electromagnetic Spectrum Operations Program



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Distribution statement A: Approved for public release;
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What is it?

A Comprehensive Integrated Afloat Spectrum Planning Tool

- ✓ Radar and Combat System Frequency Planning
- ✓ Communications Planning
- ✓ Minimizes EMI Among ALL Afloat Emitters
- ✓ Automated Information Flow of Spectrum Planning
- ✓ Automated Frequency Assignment Generation
- ✓ Analysis of EMI Involving SG and Shore Based Emitters
- ✓ Complete Deployment Frequency Plans and Operational Guidance
- ✓ Compliant with Navy Certification and Messaging Standards
- ✓ Version 2.1 delivered in October 2008

*Mandated by ALCOM 33/05,
ALSECONDFLT 18/04 / ALTHIRDFLT 06/04*

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Spectrum Planning Tools

AESOP Team

Update!
Check the SIPR website for updates to the Database, OP-3840 Appendix F, and Standing Plans.

AESOP Software



Spectrum Planning Guide



**OP-3840
Technical Manual
and
Appendix F**



AESOP Info Sheet



Ship Card



**SIPR Web Site
Resource Updates**



**Restrictions &
References**

AESOP 3.0 New Features



Afloat Electromagnetic Spectrum Operations Program

- ✓ **Database Update Tool**
- ✓ **Positions of Intended Movement (PIMs)**
- ✓ **Joint Restricted Frequency List (JRFL)**
MCEB Pub 8, Version 2.0.1 (1 July 2010); Tactical Information - JRFL
- ✓ **Enhanced Mapping Capability**
2-D and 3-D maps with Digital Terrain Elevation Data (DTED)
- ✓ **Enhanced Radar Coverage Plots**
- ✓ **Comm Link and Net Connectivity Analysis**
- ✓ **Net View and Planning Board Graphics Enhancements**
- ✓ **Database Updates** (Radar & Comm Equipment, Fourth Fleet AOR, CREW devices, Trucks, Manpacks, and UAVs)
- ✓ **Expanded Net Restoral Plan**
- ✓ **Updated Standing Communications Plans** (Commercial Broadband Satellite Program (CBSP) usage and SATCOM downlink, uplink, and rider usage, emission designator encrypted/unencrypted info)
- ✓ **TACAN Scheduler**

AESOP 3.0 Spectrum Planning Component

AESOP 3.0 prompts the user to check the SIPR website for database updates

Database Updates
available from Tool menu

Database Updates

Have you updated your AESOP database recently?



The AESOP Team periodically releases database updates via the SIPRNET web site. Updates may contain new fleet restrictions or platforms, so it's important to check the SIPRNET web site regularly.

You can determine if an update is available by using the AESOP Database Update application, which is accessible from the Tools menu.

☐ Don't show this again

OK

AESOP Database Update



Periodically, the AESOP development team will release database updates for AESOP. These database updates will contain many changes that may drastically affect your AESOP experience.

Step 1: Check for Updates

Browse to the SIPRNET web site for the latest updates.

<http://net.phdnaves.navy.mil/aesop/>

Step 2: Select the Update File

Browse...

Step 3: Apply the Updates

NOTE:
Database Updates cannot be applied if AESOP is running.

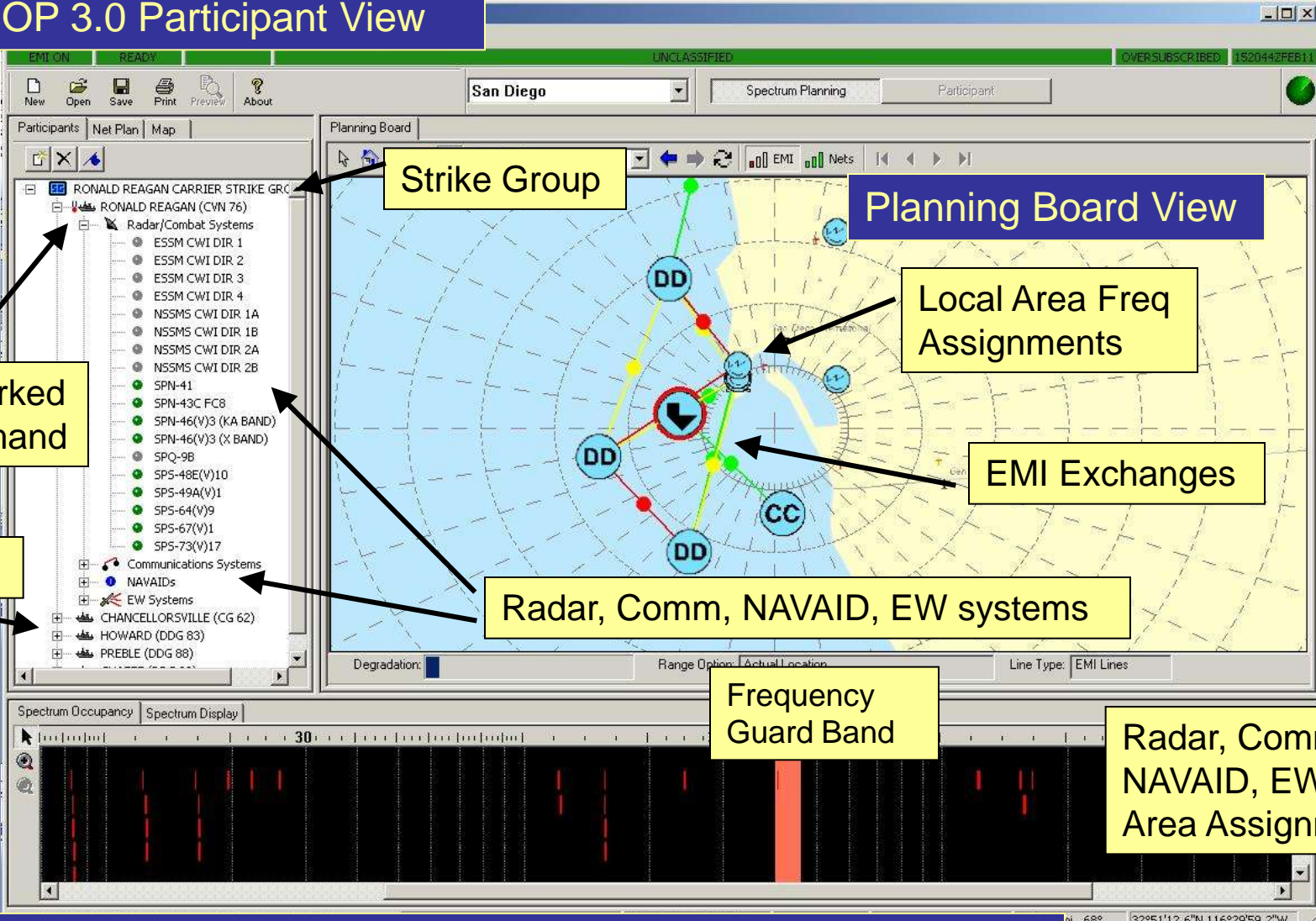
Help

Quit

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AESOP 3.0 Spectrum Planning Component

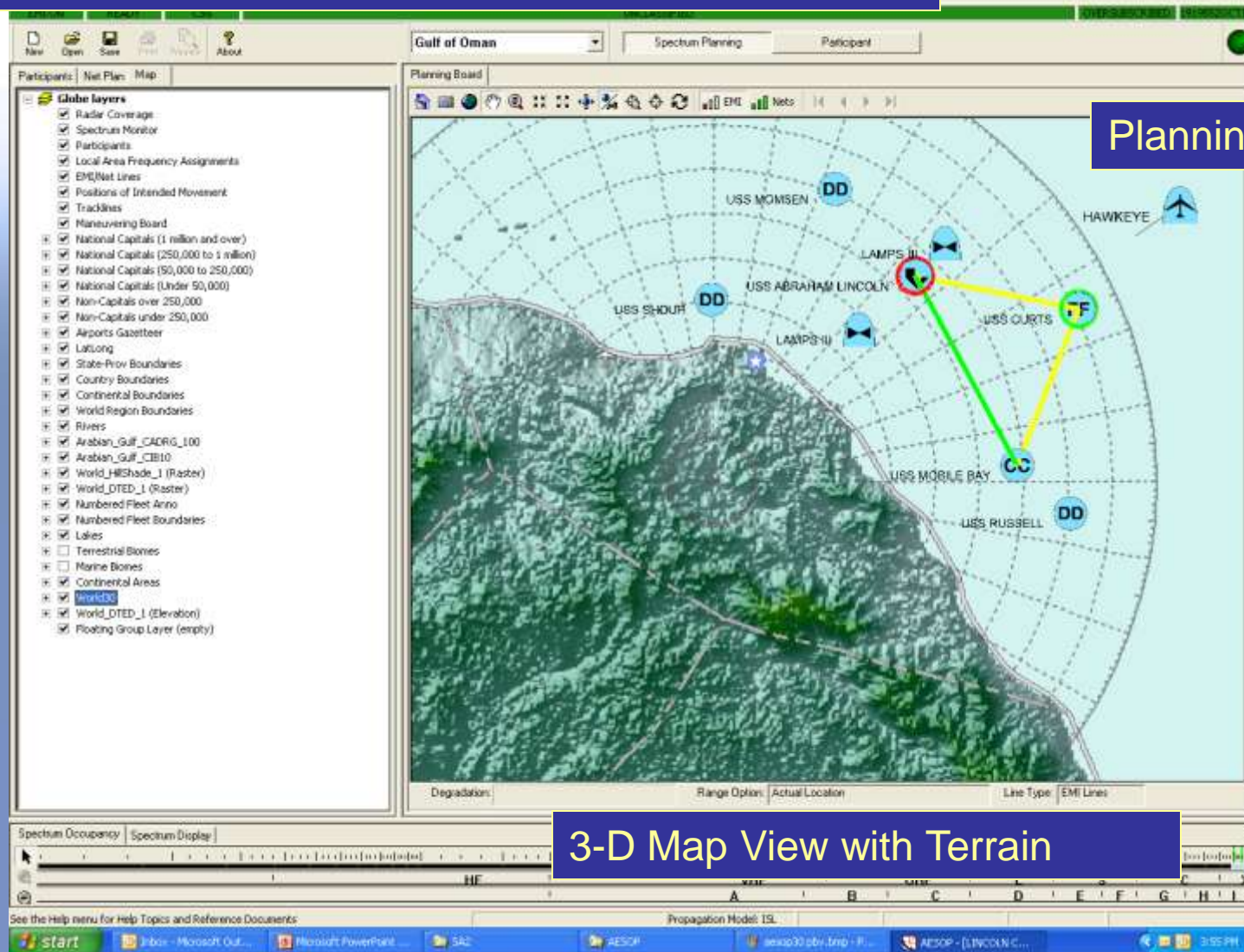
AESOP 3.0 Participant View



AESOP 3.0 Spectrum Occupancy View with International Taboo List Frequencies

AESOP 3.0 Spectrum Planning Component

AESOP 3.0 Map View – Select layers and features



Planning Board View

3-D Map View with Terrain

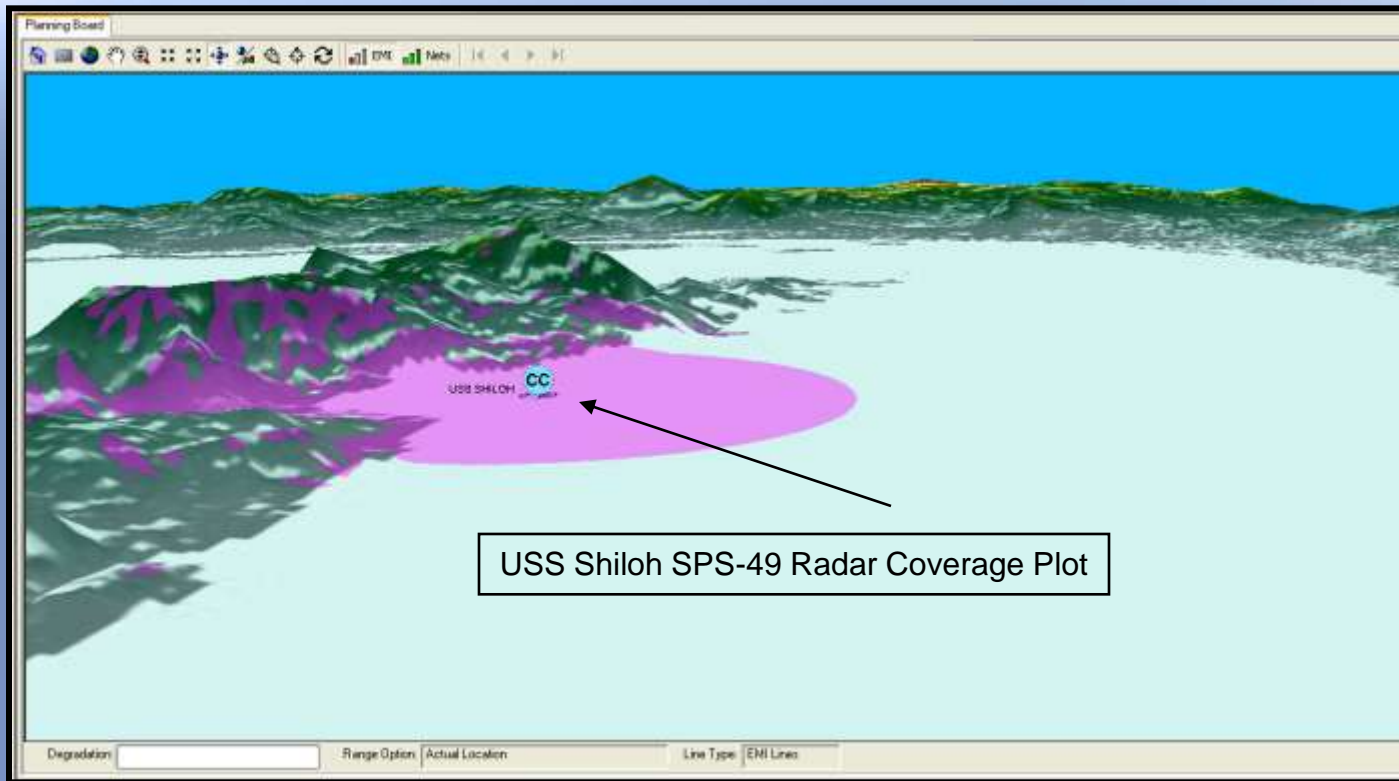
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AESOP 3.0 Spectrum Planning Component

Map View

AESOP 3.0 Draped Radar Coverage Plot using
Advanced Propagation Model (APM) and DTED data

Planning Board View



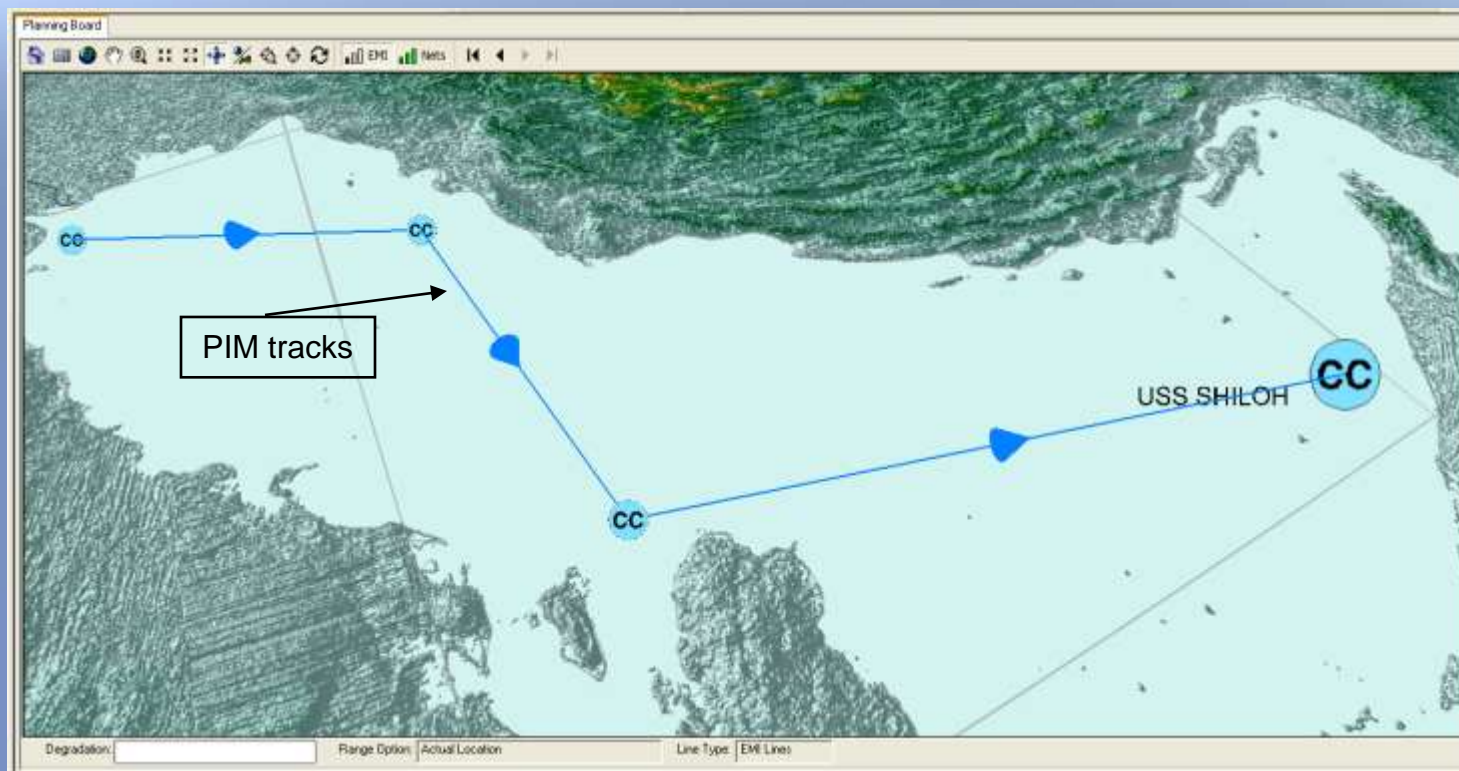
3-D Map View with Terrain

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AESOP 3.0 Spectrum Planning Component

AESOP 3.0 Position of Intended Movement (PIM) Tracks

Planning Board View

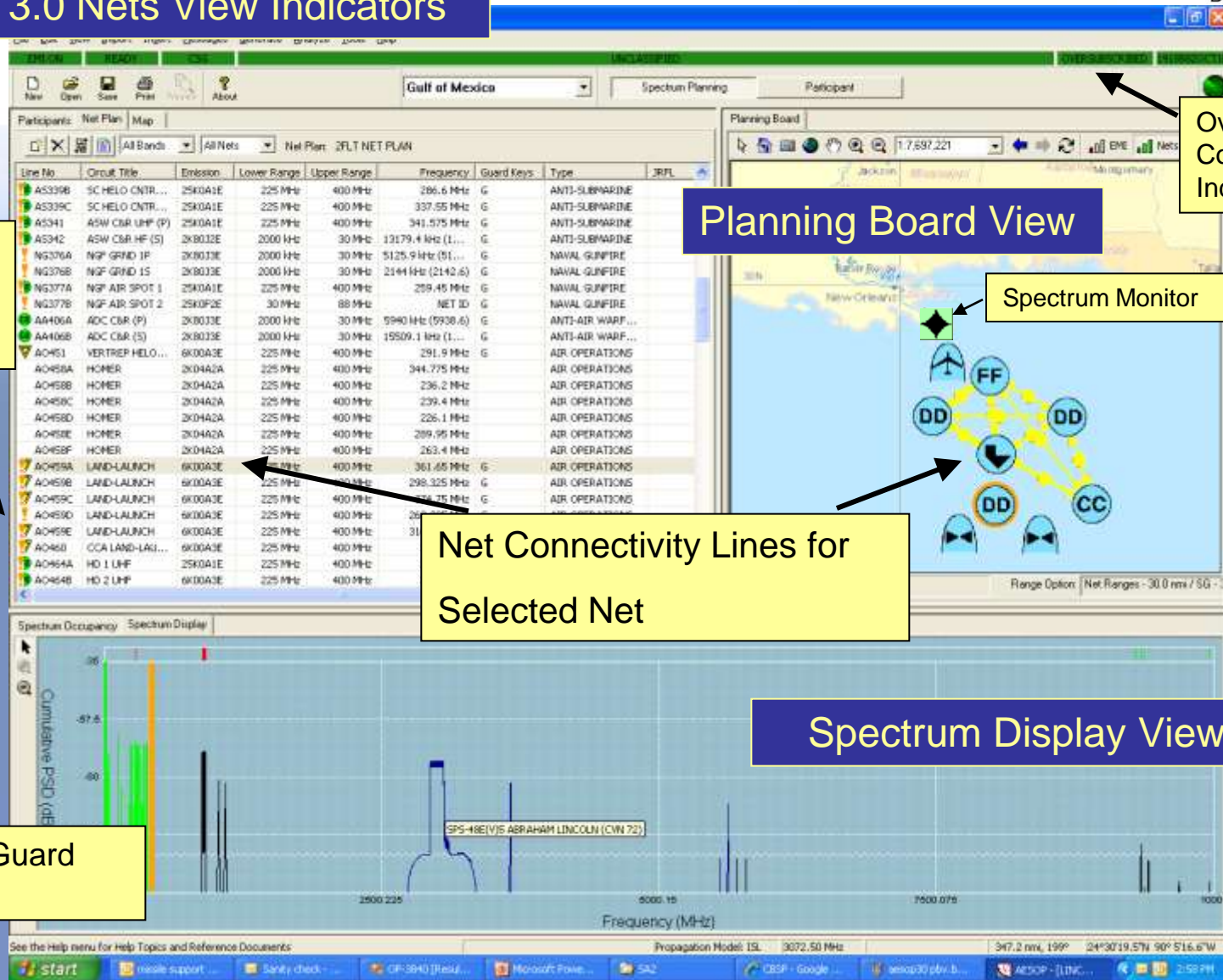


3-D Map View with Terrain

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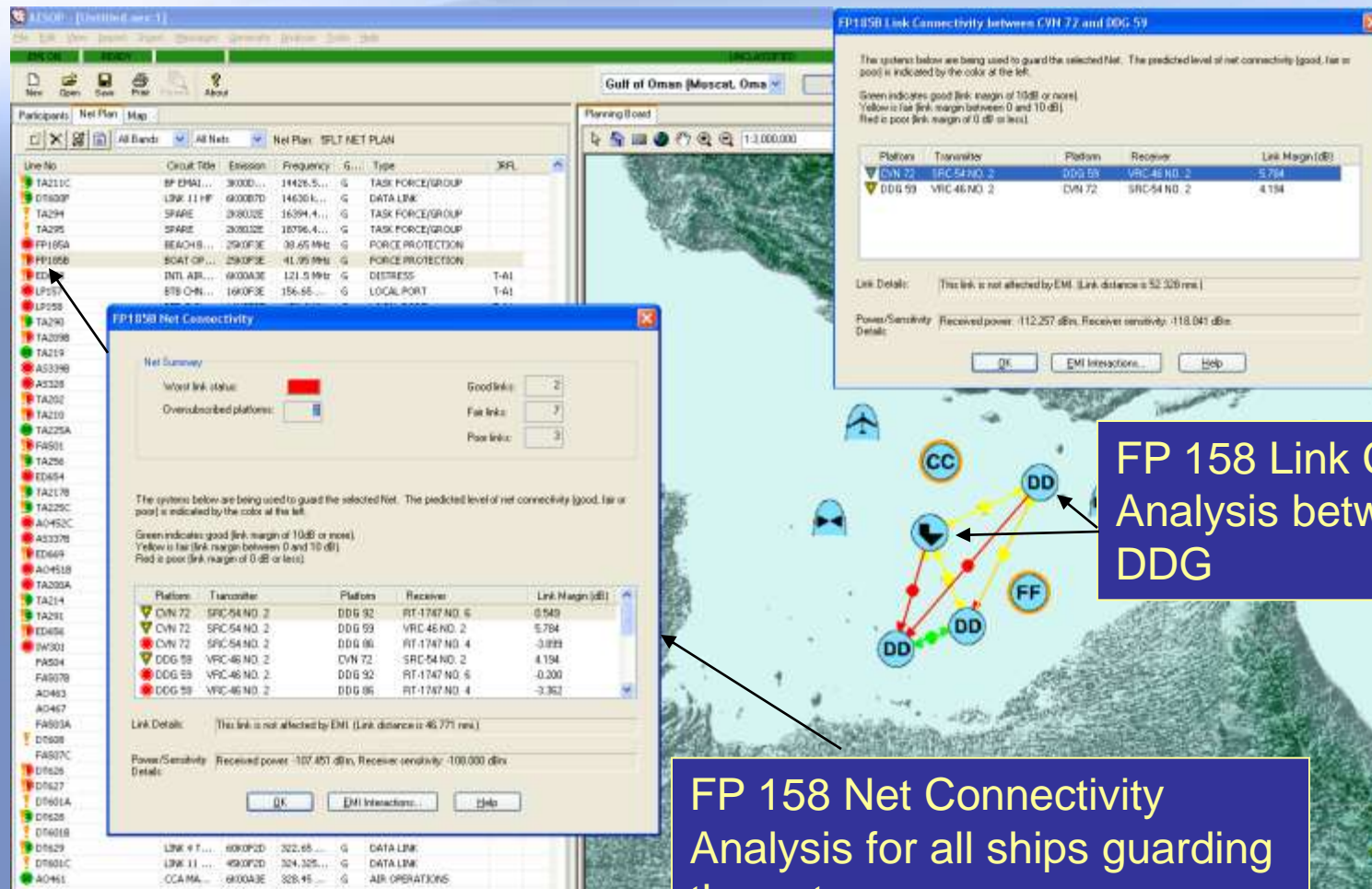
AESOP 3.0 Spectrum Planning Component

AESOP 3.0 Nets View Indicators



AESOP 3.0 Spectrum Planning Component

AESOP 3.0 Net View – Net and Link Analysis



FP 158 Link Connectivity Analysis between CVN and DDG

FP 158 Net Connectivity Analysis for all ships guarding the net

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AESOP 3.0 Spectrum Planning Component

AESOP 3.0 Net View – TACAN Scheduler

TACAN Assignments

| Platform Name | Number | TACAN ID | Channel | Start Date | End Date | OPAREA |
|-----------------|--------|----------|---------|------------|----------|--------------|
| ABRAHAM LINCOLN | CYN 72 | TB | 88V | 20110208 | 20110308 | LITTLE CREEK |
| CURTIS | FFG 38 | SU | 90K | 20110208 | 20110308 | VOCA |
| MOBILE BAY | CG 53 | YK | 39V | 20110208 | 20110308 | LITTLE CREEK |
| MOMSEN | DDG 92 | GA | 111X | 20110208 | 20110308 | LITTLE CREEK |
| RUSSELL | DDG 59 | KG | 15V | 20110208 | 20110308 | LITTLE CREEK |
| SHOLUP | DDG 86 | WH | 108V | 20110208 | 20110308 | LITTLE CREEK |

TACAN OPAREAs

Select TACAN Location

- OPAREA
- VOCA
- ANNAPOLIS
- ATLANTIC CITY
- BALTIMORE
- BEAUFORT NC
- BOQUE INLET
- CAPE MAY NJ
- COSFIVE
- OF LEBLINE
- OPCA
- FT PICKETT
- HARQUINVA

LANT TACAN Restrictions

System Restrictions

TACAN system restrictions apply to any system with a function type of "TACAN Transponder".

Double-click on a selected channel to toggle the restriction status.

"GB-RESTRICTED" indicates a channel within a guardband range(s). This restriction may not be removed from this window. Return to the Guardband Restrictions window in order to remove guardband restriction(s).

| Frequency | Channel | Status |
|-------------------------|---------|------------|
| 962.00 MHz/ 1025.00 MHz | 1K | |
| 963.00 MHz/ 1026.00 MHz | 2K | |
| 964.00 MHz/ 1027.00 MHz | 3K | RESTRICTED |
| 965.00 MHz/ 1028.00 MHz | 4K | RESTRICTED |
| 966.00 MHz/ 1029.00 MHz | 5K | RESTRICTED |
| 967.00 MHz/ 1030.00 MHz | 6K | RESTRICTED |
| 968.00 MHz/ 1031.00 MHz | 7K | RESTRICTED |
| 969.00 MHz/ 1032.00 MHz | 8K | RESTRICTED |
| 970.00 MHz/ 1033.00 MHz | 9K | RESTRICTED |
| 971.00 MHz/ 1034.00 MHz | 10K | RESTRICTED |

AESOP 3.0 Common Operational Spectrum Report

AESOP 3.0 includes Joint Restricted Frequency List (JRFL) frequencies

Microsoft Excel - COS Report Gulf of Oman.xls

File Edit View Insert Format Tools Data Team

New List Get Work Items Publish Refresh Conf

pdfMachine

A1 UNCLASSIFIED

| | A | B | C | D | E | F | G | H | I | J | K |
|----|------------------------|----------|------------|--------------------------------------|-------------------|----------|---------------------|----------------|------|---|---|
| 1 | UNCLASSIFIED | | | | | | | | | | |
| 2 | NAVY JRFL FREQUENCIES | | | | | | | | | | |
| 3 | Protection Code | Priority | Identifier | Description | Frequency | Status | Justification | Type | | | |
| 4 | Taboo | A1 | LP157 | BTB CHNL-13 | 156.65 MHz | Approved | International Taboo | Frequency List | Net | | |
| 5 | Taboo | A1 | LP158 | BTB CHNL-16 | 156.8 MHz | Approved | International Taboo | Frequency List | Net | | |
| 6 | Taboo | A1 | ED651 | INT DISTRESS-CALLING | 2183.4 kHz (2182) | Approved | International Taboo | Frequency List | Net | | |
| 7 | Taboo | A1 | ED653 | INTL AIR DISTRESS | 121.5 MHz | Approved | International Taboo | Frequency List | Net | | |
| 8 | Taboo | A1 | ED654 | MIL AIR DISTRESS | 243 MHz | Approved | International Taboo | Frequency List | Net | | |
| 9 | JOINT JRFL FREQUENCIES | | | | | | | | | | |
| 10 | Protection Code | Priority | Identifier | Description | Frequency | Status | Justification | Type | | | |
| 11 | Taboo | A1 | | GMDSS/MET AND NAV WARNINGS | 490 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 12 | Taboo | A1 | | GMDSS/NAVTEX/MET AND NAV WARNINGS | 518 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 13 | Taboo | A1 | | INTL DISTRESS/SAFETY | 2176 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 14 | Taboo | A1 | | INTERNATIONAL DISTRESS | 2183.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 15 | Taboo | A1 | | INTL DISTRESS/SAFETY | 2189 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 16 | Taboo | A1 | | INTERNATIONAL SAR | 3024.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 17 | Taboo | A1 | | INTL DISTRESS/SAFETY | 4126.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 18 | Taboo | A1 | | INTL DISTRESS/SAFETY | 4179 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 19 | Taboo | A1 | | INTL DISTRESS/SAFETY | 4209 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 20 | Taboo | A1 | | INTL MARITIME NAV SAFETY | 4211.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 21 | Taboo | A1 | | GMDSS/NAVTEX MET AND NAV WARNINGS | 4211.5 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 22 | Taboo | A1 | | INTERNATIONAL SAR | 5681.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 23 | Taboo | A1 | | INTERNATIONAL DISTRESS SAFETY | 6216.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 24 | Taboo | A1 | | INTL DISTRESS/SAFETY | 6269.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 25 | Taboo | A1 | | INTL DISTRESS/SAFETY | 6313.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 26 | Taboo | A1 | | INTL MARITIME SAFETY/GMDSS | 6316 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 27 | Taboo | A1 | | INTL DISTRESS/SAFETY | 8292.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 28 | Taboo | A1 | | INTL SAR/SURVIVAL CRAFT | 8364 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 29 | Taboo | A1 | | INTL DISTRESS/SAFETY | 8378 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 30 | Taboo | A1 | | INTL DISTRESS/SAFETY | 8416 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 31 | Taboo | A1 | | GMDSS/INTL MARITIME SAFETY | 8418.5 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 32 | Taboo | A1 | | INTL DISTRESS/SAFETY | 12291.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 33 | Taboo | A1 | | INTL DISTRESS/SAFETY | 12521.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 34 | Taboo | A1 | | INTL DISTRESS/SAFETY | 12578.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 35 | Taboo | A1 | | GMDSS/INTL NAVIGATION SAFETY | 12581 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 36 | Taboo | A1 | | INTL DISTRESS/SAFETY | 16421.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 37 | Taboo | A1 | | INTL DISTRESS/SAFETY | 16696.4 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 38 | Taboo | A1 | | INTL DISTRESS/SAFETY | 16806 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 39 | Taboo | A1 | | GMDSS/INTL MARITIME SAFETY | 16808.5 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 40 | Taboo | A1 | | GMDSS/INTL MARITIME SAFETY | 19682.5 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 41 | Taboo | A1 | | GMDSS/INTL MARITIME SAFETY | 22378 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 42 | Taboo | A1 | | GMDSS/INTL MARITIME SAFETY | 26102.5 kHz | Approved | International Taboo | Frequency List | ITFL | | |
| 43 | Taboo | A1 | | INTL DISTRESS/AERONAUTICAL EMERGENCY | 121.5 MHz | Approved | International Taboo | Frequency List | ITFL | | |
| 44 | Taboo | A1 | | INTL DISTRESS/AERONAUTICAL EMERGENCY | 123.1 MHz | Approved | International Taboo | Frequency List | ITFL | | |
| 45 | Taboo | A1 | | INTL SHIP/AIRCRAFT SAR | 156.3 MHz | Approved | International Taboo | Frequency List | ITFL | | |

Ready

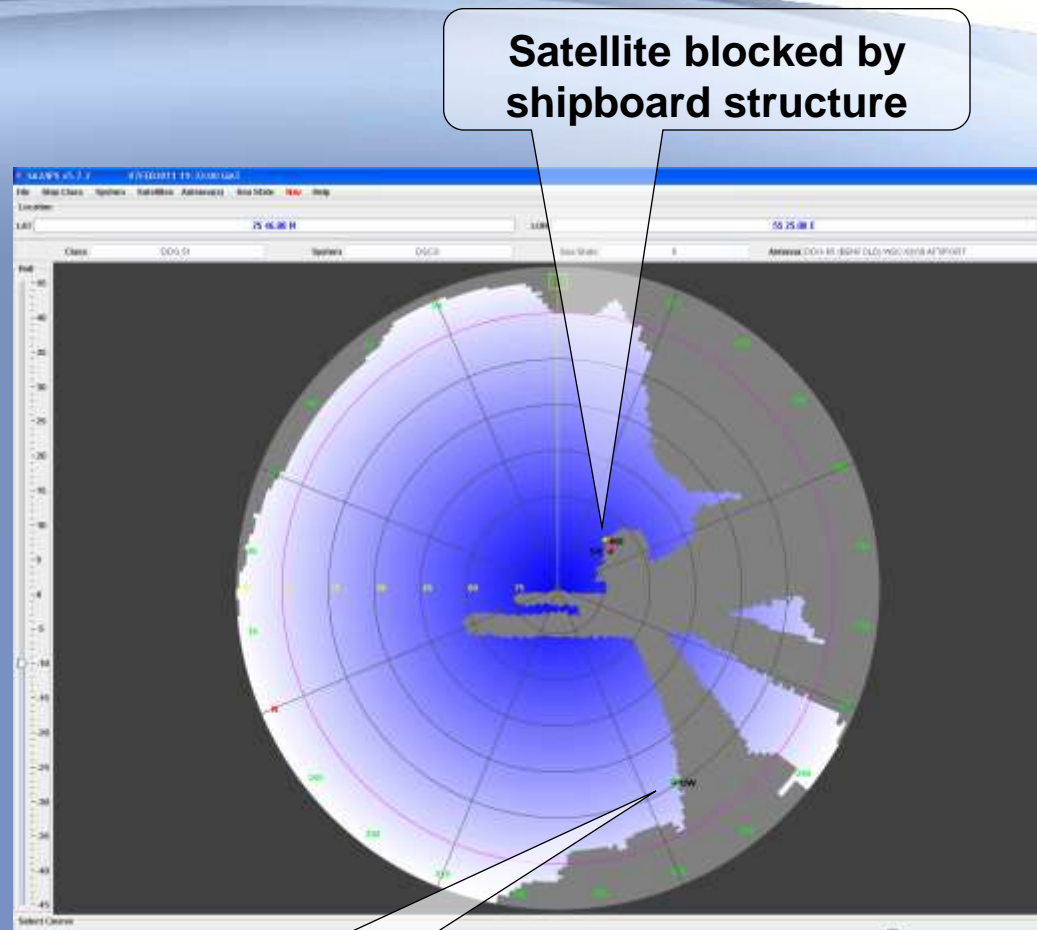
Spectrum Use Summary Legend JRFL ABE (CVN 72) CUR (FFG 38) HAE (E 2C) ZAS (SH 60B) LPS (SH 60F)

start Inbox - Microsoft Out... Microsoft PowerPoint... SA2 AESOP AESOP - LINCOLN CS... Microsoft Excel - COS... NUM 4:32 PM

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Satellite Availability & Analysis (SA2)

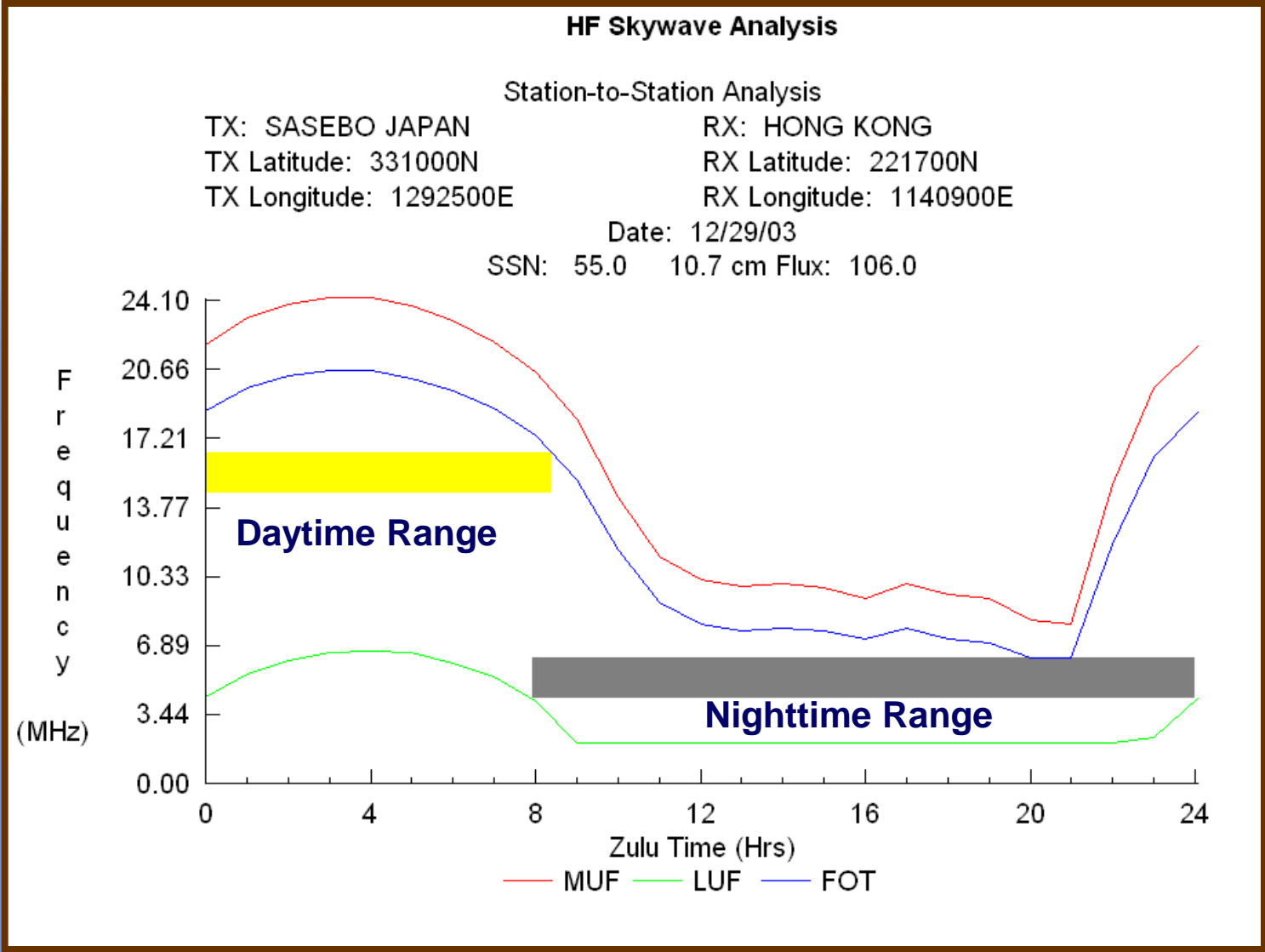
- ✓ AESOP 3.0 – SA2 v5.7.2
- ✓ Software application – situational awareness for SATCOM operators
- ✓ Shows locations of satellites
- ✓ Shows relation of satellites to shipboard structures (masts, cranes, deckhouses, and other antennas)
- ✓ Shows Line Of Sight (LOS) blockage



Satellite free from
blockage

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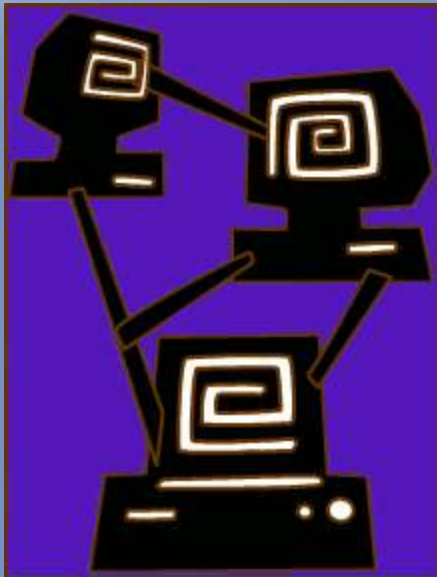
HF Skywave Analysis



SFAF and SSRF

Standard Frequency Action Format (SFAF)

Standard Spectrum Resource Format (SSRF)



- ✓ Joint Interoperability Requirement
- ✓ MCEB Pub 7 (SFAF)
- ✓ MCEB Pub 8 (SSRF)
 - Version 2.0.1 (1 July 2010)
 - Tactical Information - JRFL
- ✓ Standard for DoD Import and Export of Frequency Management Information
 - Government, Civilian, Other DoD Systems
 - Area Frequency Coordinator (AFC)
 - Joint Task Force Commander

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AESOP 3.0 Outputs

Messages

- Communications Planning:
 - Frequency Request
 - OPTASK COMM Plan (XML or GENADMIN)
- Radar Planning:
 - Request
 - Assignment
- Participant:
 - Reply (XML or GENADMIN)
- **TACAN Assignment and Periodic** (SFAF or GENADMIN)
- **JRFL Message (XML – MCEB PUB 8)**

Graphical Displays

- Planning Board View – EMI and Net Connectivity
- Spectrum Occupancy View
- Spectrum Display
- Radar Coverage Plot
- HF SkyWave Analysis
- SA2

Reports

- **Common Operational Spectrum**
- Assignments
- Comm Nets
- Electromagnetic Environment
- EMI Victims & Interactions
- Engineering Analysis
- Guard Requirements
- IMI Analysis
- Inventory
- Net Prioritization
- Participants
- Phase
- Platform Equipment Inventory
- Platform Position
- Restriction
- Radar and Comm Plans in SFAF
- Spectrum Use
- System Characteristics

Future Plans - AESOP 4.0

- ✓ MCEB Pub 8 XML Compliance.
 - 3.0 JRFL output already complies with Pub 8.
 - Current SFAF output will be available in Pub 8 format.
- ✓ Net-Centric Application.
 - Web-enabled, thick-client application.
 - Remotely-located database allowing collaboration.
 - Master AESOP database will be deployed ashore, accessible via SIPRNET.
 - AESOP's stand-alone capability will be retained for users without SIPRNET or with limited bandwidth capability.

More Future Plans - AESOP 4.0

- ✓ Improved Antenna Modeling
 - For improved analysis and visualization capabilities.
 - Users will be able to view and use 2D and 3D antenna pattern data from the database.
- ✓ System Operational Effectiveness Visualization
 - Enhanced radar coverage plots
 - The effects of EMI on target detection,
 - Show a multi-sensor coverage area,
 - Provide a 3D view of radar coverage.
 - Coverage plots for other systems types (communication, NAVAID, and EW) in the presence of EMI.
- ✓ Automated Spectrum Analyzer Interface
 - Interface with a spectrum analyzer
 - Observed signals will be displayed on AESOP's Spectrum Display
 - Will allow comparison of planned spectrum use to actual RF environment.

AESOP 3.0 Highlights



Questions?

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<http://cnl.phdnswc.navy.smil.mil/aesop/>

AESOP Version 2.1/3.0



- ✓ System Security Authorization Agreement (SSAA) and Authority To Operate (ATO), 14 APRIL 2009
- ✓ Department of Navy Application and Database Management System (DADMS)
 - 52038
- ✓ Navy-Marine Corps Intranet (NMCI)
 - RFS-106579
 - ISF-117477
- ✓ Information Technology for the 21st Century (IT-21)
 - PSC-2009-00076
- ✓ Naval Education and Training Command (NETC) Training Network (TRANET)
 - NETC_N00076_TRANET-C_S
 - NETC_N00076_TRANET_U
- ✓ OCONUS Navy Enterprise Network (ONE-NET)
 - Reference DADMS Number 52038 when calling the ONE-NET Help Desk for installation.